AMS Series Gigabit Managed Switches

AMS-10T2SFP
AMS-26T6SFP
AMS-48T4SFP
AMS-24T4S4SP
AMS-48T4S4SP
AMS-4T24S4SP

Quick Install Guide

Proudly Distributed by
LEGEND PERFORMANCE TECHNOLOGY
More information
T: 1800 328 200 F: 1800 328 239 E: sales@legend.com.au W: www.legend.com.au

Version: 1.0.1 Oct 2012

About this Guide 3
Compliances and Safety Statements 4

1. Introduction 8

Overview of AMS Series Layer 2+ SNMP Managed Switches 8
Front View of AMS-24T6SFP 9
Rear View of AMS-24T6SFP 9
Switch Architecture 9
Network Management Options 9

2. Description of Hardware 10

1000Base-T Ports 10

SFP Module Slots 10

Port and System Status LED's 12
Port Status LED's 12
System Status LED's 12

Power Supply Socket 12
Power socket on AMS Series switches 12
Power sockets on AMS-4T24S4SFP 13

3. Network Planning 13

Installing the Switch 13
Selecting a site 13
Ethernet Cabling 14
Equipment Checklist 14
Package Contents 14
Mounting 15
Rack Mounting 15
Desktop Mounting 16
Installing an optional SFP Module 17
Connecting to a power source 18
Connecting to the console port 18

4. Operation of Web-based Management 20

5. Making Network Connections 21
Connecting Network Devices 21
Twisted-Pair Guidelines 21
Cabling Guidelines 21
Connecting to PC's, Servers and Switches 22
Network Wiring Connections 23
Fibre Optic SFP Devices 24

6. Cable Labeling and Connection Records 25

7. Troubleshooting 26

Basic Troubleshooting Tips 26

8. Power and Cooling Problems..... 28

Installation 28

In-band Access 28

9. Specifications..... 29

About this Guide

Purpose

This guide gives specific information on how to operate and use the management functions of the switch.

Audience

The guide is intended for use by network administrators who are responsible for operating and maintaining network equipment; consequently, it assumes a basic working knowledge of general switch functions, the Internet Protocol (IP), and Simple Network Management Protocol (SNMP).

Warranty

The AMS series comes with a standard 3 year warranty. For full Alloy warranty terms and conditions please follow the link below:
http://www.alloy.com.au/Warranty

Conventions

The following conventions are used throughout this guide to show information:

	NOTE: Emphasizes important information or calls your attention to related features or instructions.
	WARNING: Alerts you to a potential hazard that could cause personal injury.
	CAUTION: Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

Compliances and Safety Statements

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

European Community (CE) Electromagnetic Compatibility Directive

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

RFI Emission: - Limit according to EN 55022:2010 AS/NZS CISPR 22:2009, Class A

- Limit for harmonic current emission according to EN 61000-3-2:2006+A1:2009+A2:2009

- Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3:2008

Immunity: - Product family standard according to EN 55024:2010

- Electrostatic Discharge according to IEC 61000-4-2:2008

- Radio-frequency electromagnetic field according to IEC 61000-4-3:2006+A1:2007+A2:2010

- Electrical fast trsnsient/burst according to IEC 61000-4-4:2010

- Surge immunity test according to IEC 61000-4-5:2005

- Immunity to conducted disturbances, Induced by radio-frequency fields:IEC 61000-4-6:2008

- Power frequency magnetic field immunity test according to IEC 61000-4-8:2009

- Voltage dips, short interruptions and voltage variations immunity test according to IEC 61000-4-11:2004

LVD: - EN60950-1:2006+A11:2009+A1:2010EMC:

Australian C-Tick Compliance.
This equipment is compliant with the required Australian C-Tick standards

PLEASE READ THE FOLLOWING SAFETY INFORMATION CAREFULLY BEFORE INSTALLING THE SWITCH:
WARNING: Installation and removal of the unit must be carried out by qualified personnel only.

- This guide is intended for use by network administrators who are responsible for setting up and installing network equipment; consequently it assumes a basic working knowledge of LANs (Local Area Networks).

- The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.

- Do not connect unit to an A.C outlet (power supply) without an earth (ground) connection.

- The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN 60320/IEC 320 appliance inlet.

- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 60950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

SAFETY PRECAUTIONS

Read the following information carefully before operating the device. Please follow the following precaution items to protect the device from risks and damage caused by fire and electric power:

- Use the power adapter that is included with the device package.
- Pay attention to the power load of the outlet or prolonged lines. An overburdened power outlet or damaged cords and plugs may cause electric shock or fire. Check the power cords regularly, if you find any damage, replace it at once.
- Proper space for heat dissipation is necessary to avoid any damage caused by device overheating. The ventilation holes on the device are designed for heat dissipation to ensure that the device works normally. Do not cover these ventilation holes.
- Do not put this device close to a place where a heat source exits or high temperature occurs. Avoid placing the device in direct sunshine.
- Do not put this device close to a place which is damp or wet. Do not spill any fluid on this device.
- Please follow the instructions in the user manual/quick install guide carefully to connect the device to your PC or other electronic product. Any invalid connection may cause a power or fire risk.

Do not place this device on an unstable surface or support.

CAUTION: Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.
- If you are connecting a device mounted outdoors to this switch please ensure you have installed an additional lightning arrestor between this device and the outdoor equipment.

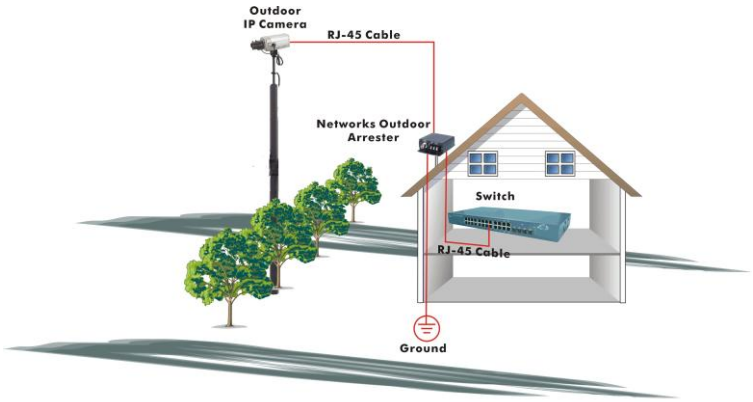


Fig. Additional arrester installed between outdoor device and this switch

NOTE: The switch is indoor device; if it will be used in outdoor environment or connects with some outdoor device, then it must use a lightning arrester to protect the switch

WARNING:

- Self-demolition of Product is strictly prohibited. Damage caused by self-demolition will result in voiding the switches warranty.
- Do not place product in outdoor locations.
- Before installation, please make sure input power supply and product specifications are compatible to each other.
- To reduce the risk of electric shock. Disconnect all AC or DC power cords and RPS cables to completely remove power from the unit.
- Before importing / exporting configuration please make sure the firmware version is always the same.

1. Introduction

Overview of AMS Series Layer 2+ SNMP Managed Switches

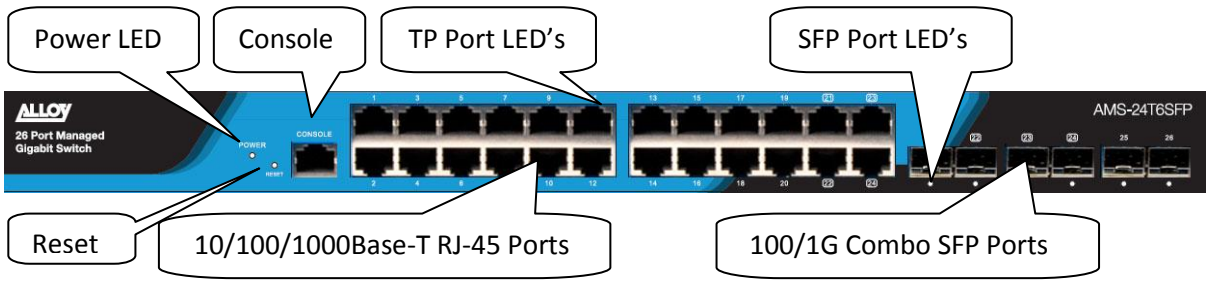
With a comprehensive range of Layer 2+, QoS, Security and OAM features, AMS series switches are the ideal solution at the edge or aggregation layer of medium to large enterprise, campus, metropolitan, and Service Provider networks.

AMS Series switch models offer flexible port configurations, with combinations of 1000Base-T 10/100/1000Mbps RJ-45, paired 1000Base-T/SFP arrays (with the SFP slot supporting 100Mbps or 1Gbps modules), unpaired SFP slots (also supporting 100Mbps or 1Gbps SFP modules), and SFP+ slots for 1Gbps or 10Gbps SFP+ modules. Port densities range from 10 to 52 ports.

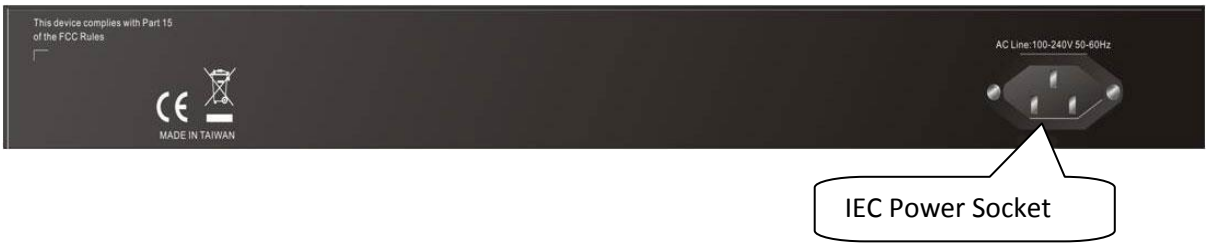
All models in the range feature advanced Layer 2+ management functions, ensuring the high performance required by modern networks supporting data, voice and video applications. An intuitive web GUI management interface can be accessed via HTTP or HTTPS. SNMP versions 1, 2 and 3 are supported as well as RMON, allowing the network administrator to manage, configure and control the switch from any SNMP based software application. Console port, and CLI are also supported. A dual IPv4/IPv6 protocol stack is provided, supporting a wide range of IPv6 applications including Web/SSL, Telnet/SSH, Ping, SNTP, TFTP, SNMP, RADIUS and Syslog. Other supported functions include: Link Aggregation Control Protocol (LACP) trunking; VLAN, IGMP and MLD; Link Layer Detection Protocol (LLDP); v1 and v2 SSH, IP Source Guard, RADIUS/TACACS+ and Access Control Lists (ACLs).

AMS series switches comply with the latest IEEE 802.3az Energy Efficient Green Ethernet standard to minimise power usage, with features such as Link Detection and Cable Length Detection are supported. Link Detection automatically turns the power off/on to individual ports depending on link/idle traffic status. Cable Length Detection adjusts the signal strength based on the length of the cable - when using shorter cables the power consumption is reduced.

Front View of AMS-24T6SFP



Rear View of AMS-24T6SFP



Switch Architecture

The switch performs at wire-speed, non-blocking switching fabric. This allows wire-speed transport of multiple packets at low latency on all ports simultaneously. The switch also features full-duplex capability on all ports, which effectively doubles the bandwidth of each connection.

This switch uses store-and-forward technology to ensure maximum data integrity. With this technology, the entire packet must be received into a buffer and checked for validity before being forwarded. This prevents errors from being propagated throughout the network.

Network Management Options

The switch can also be managed over the network with a web browser or Telnet application. The switch includes a built-in network management agent that allows it to be managed in-band using SNMP or RMON (Groups 1, 2, 3, 9) protocols. It also has an RJ45 console port connector on the front panel for out-of-band management. A PC may be connected to this port for configuration and monitoring out-of-band via a null-modem serial cable. (See Appendix B for wiring options.)

NOTE: For a detailed description of the management features, refer to the *User's manual*.

2. Description of Hardware

1000Base-T Ports

The AMS Series switches contain 4x 1000BASE-T RJ-45 ports (AMS-4T24S4SFP), 24x 1000BASE-T RJ-45 ports (AMS-24T6SFP & AMS-24T4S4SFP) or 48x 1000BASE-T RJ-45 ports (AMS-48T4SFP & AMS-48T4S4SFP). All RJ-45 ports support automatic MDI/MDI-X operation, auto-negotiation and IEEE 802.3x auto-negotiation of flow control, so the optimum data rate and transmission can be selected automatically.

SFP Module Slots

The AMS Series switches are equipped with SFP slots for the installation of Fibre Optic SFP modules.
The AMS-4T24S4SFP has 24x 100M/1G SFP slots and 4x 1G/10G SFP slots.
The AMS-24T6SFP has 6x 100M/1G SFP slots, 4 of which are paired with UTP Ports, 21 – 24.
The AMS-24T4S4SFP has 4x 100M/1G SFP slots and 4x 1G/10G SFP+ slots, the 4x 100M/1G slots are again paired with ports 21 – 24.
The AMS-48T4SFP has 4x 100M/1G SFP slots, the 4x 100M/1G slots are paired with ports 45 - 48.
The AMS-48T4S4SFP has 4x 100M/1G SFP slots and 4x 1G/10G SFP+ slots, the 4x 100M/1G slots are again paired with ports 45 – 48.

With a great range of flexible options the AMS series can support 100M, 1G and 10G SFP/SFP+ modules in particular ports determined by the switch model being used.
The following table shows a list of some of the supported SFP modules.*

SFP Module	Speed	Fibre Diameter (µ)	Wavelength (nm)	Maximum Distance #
SFP10G-MLC	10G	50/125	850	300m
SFP10G-SLC10	10G	9/125	1310	10Km
SFP10G-SLC40	10G	9/125	1550	40Km
SFP10G-SLC80	10G	9/125	1550	80Km
MGBIC-T	10/100/1000	N/A	N/A	100m
MGBIC-MLC	1G	50/125	850	550m
	1G	62.5/125	850	220m
MGBIC-SLC20	1G	9/125	1310	20Km
MGBIC-SLC4013	1G	9/125	1310	40Km
MGBIC-SLC4015	1G	9/125	1550	40Km
MGBIC-SLC80	1G	9/125	1550	80Km

MGBIC-SLC120	1G	9/125	1550	120Km
MGBICWDMS3.02	1G	N/A	TX-1310/RX-1550	2Km
MGBICWDMS5.02	1G	N/A	TX-1550/RX-1310	2Km
MGBICWDMS3.20	1G	N/A	TX-1310/RX-1550	20Km
MGBICWDMS5.20	1G	N/A	TX-1550/RX-1310	20Km
MGBICWDMS3.40	1G	N/A	TX-1310/RX-1550	40Km
MGBICWDMS5.40	1G	N/A	TX-1550/RX-1310	40Km
MGBICWDMS3.80	1G	N/A	TX-1310/RX-1550	80Km
MGBICWDMS5.80	1G	N/A	TX-1550/RX-1310	80Km
100SFP-M02	100M	62.5/125	1310	2Km
100SFP-S20	100M	9/125	1310	20Km
100SFP- S40	100M	9/125	1310	40Km
100SFP- S80	100M	9/125	1550	80Km
100SFP- S120	100M	9/125	1550	120Km
100SFP- S150	100M	9/125	1550	150Km

*Other SFP modules are available and compatible with the AMS Series switches.
Maximum distance may vary.

Port and System Status LED's

The AMS Series switches include a display panel for system and port indications that simplify installation and network troubleshooting. The LEDs are located on left hand side of the front panel or over the port sockets for easy viewing. Details are shown below and described in the following tables.

Port Status LED's

LED	Condition	Status
TP (Link/ACT)	Green	Lit Green when TP link is active Blinks when traffic is present
TP Speed	Green	Lit Green when TP link is 1000Mbps Blinks when TP link is 100Mbps Off when TP link is 10Mbps
SFP (Link/ACT)	Green/Amber	Lit Green when SFP link is 1000Mbps Lit Amber when SFP link is 100Mbps Blinks when any traffic is present

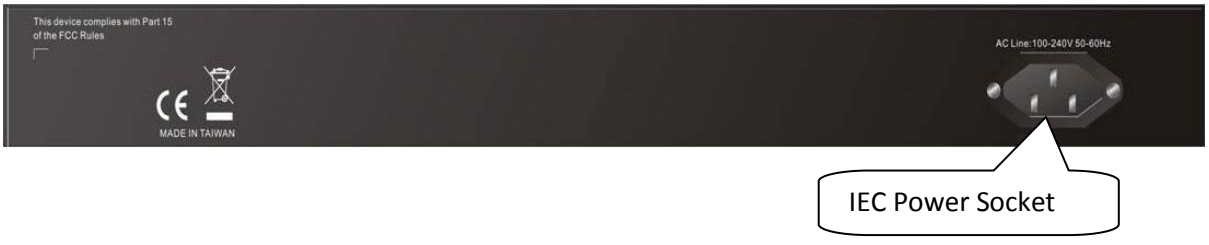
System Status LED's

System LED	Condition	Status
Power	Green Off	Lit when power is on

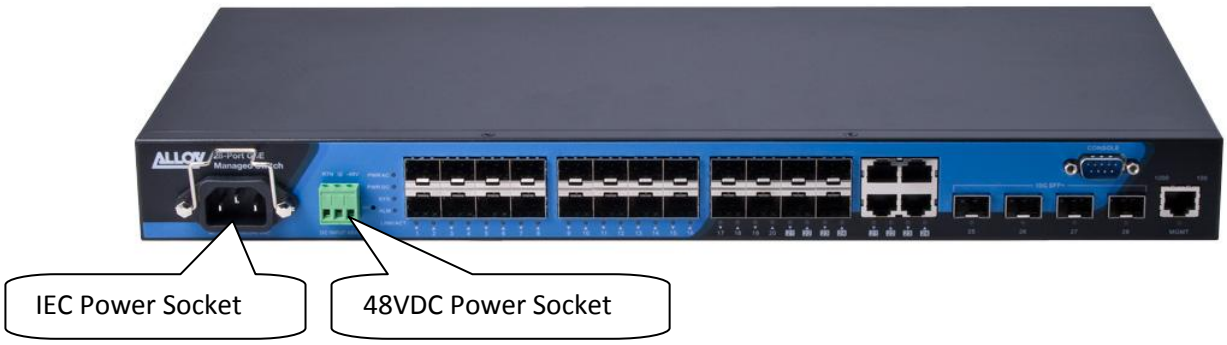
Power Supply Socket

The power Socket for the AMS Series switches is located at the rear of the switch.
The AMS-4T24S4SFP is an exception and has the power socket on the front of the switch. The AMS-4T24S4SFP also has a secondary 48VDC terminal block located on the front of the switch.

Power socket on AMS Series switches



Power sockets on AMS-4T24S4SFP



3. Network Planning

Installing the Switch

Selecting a site

The AMS Series switches can be rack mounted in a standard 19" equipment rack using the supplied Rack Mount Kit, or they can be installed on any flat surface. Be sure to follow the guidelines below when choosing a location.

The site should be:

- At the centre of all the devices you want to link and near a power outlet.
- Be able to maintain its temperature within 0 to 40°C (32 to 104 °F) and its humidity within 10% to 90%, non-condensing.
- Be accessible for installing, cabling and maintaining the device.
- Allow the status LEDs to be clearly visible.

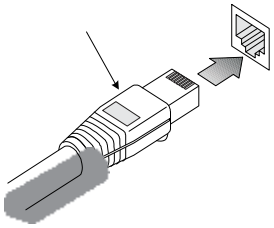
Make sure the twisted-pair Ethernet cable is always routed away from power lines, radios, transmitters or any other electrical interference.

Make sure that AMS Series switches are connected to a separate grounded power outlet that provides 100 to 240 VAC, 50 to 60 Hz.

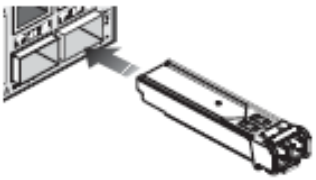
Ethernet Cabling

To ensure proper operation when installing the switch into a network, make sure that the current cables are suitable for 100BASE-TX or 1000BASE-T operation. Check the following criteria against the current installation of your network:

- Cable type: Unshielded twisted pair (UTP) or shielded twisted pair (STP) cable with RJ-45 connectors; Category 5 or Category 5e with maximum length of 100 meters is recommend 100BASE-TX, and Category 5e or 6 with maximum length of 100 meters is recommend for 1000BASE-T.
- Protection from radio frequency interference emissions.
- Electrical surge suppression.
- Separation of electrical wires and data based network wiring.
- Safe connections with no damaged cables, connectors or shields.



RJ-45 Connections



SFP Module

Equipment Checklist

After unpacking this switch, please check the contents to be sure you have received all the components. Then, before beginning the installation, be sure you have all other necessary installation equipment.

Package Contents

- AMS Series Switch
- Four adhesive rubber feet
- Mounting Accessory (for 19” Rack Shelf)
- CD containing User Manual and QIG
- AC Power Cord
- RS-232 to RJ-45 Console Cable

NOTE: Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.

WARNING: The mini-GBICs are Class 1 laser devices. Avoid direct eye exposure to the beam coming from the transmit port.

Mounting

The switch can be mounted in a standard 19-inch equipment rack or on a desktop or shelf. Mounting instructions for each type of site as follows.

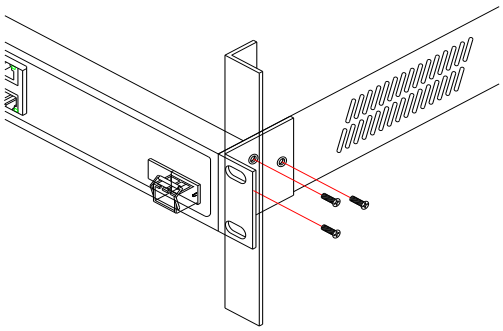
Rack Mounting

Before rack mounting the switch, please pay attention to the following factors:

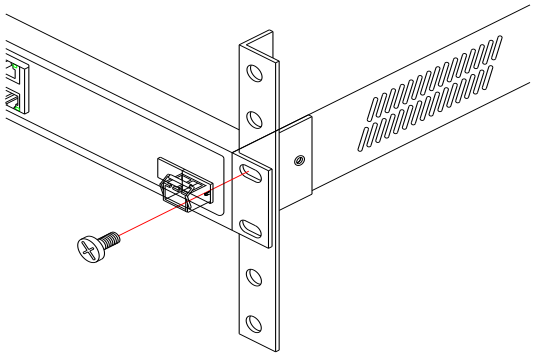
- Temperature: Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range (0 to 40 °C).
- Mechanical Loading: Do not place any equipment on top of a rack-mounted unit.
- Circuit Overloading: Be sure that the supply circuit to the rack assembly is not overloaded.
- Grounding: Rack-mounted equipment should be properly grounded.

To Rack mount the AMS Series Switches:

1. Attach the brackets to the device using the screws provided with the rack mount kit.



2. Mount the device in the rack using four rack-mounting screws (not provided). Be sure to secure the lower rack-mounting screws first to prevent the brackets from being bent by the weight of the switch.

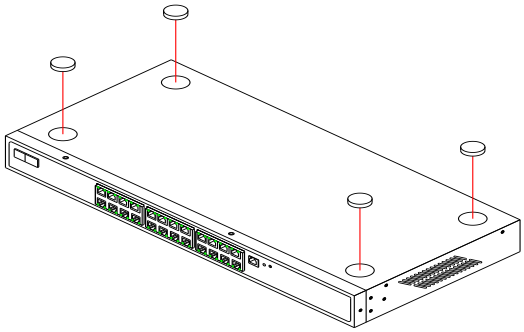


3. If installing a single switch, turn to “Connecting to a Power Source” at the end of this chapter.

4. If installing multiple switches, please follow steps 1 and 2 for installation of the other switches.

Desktop Mounting

1. Attach the four adhesive rubber feet to the bottom of the switch.



2. Set the device on a flat surface near an AC power source, making sure there are at least two inches of space on all sides for proper air flow.

3. If installing a single switch, turn to “Connecting to a Power Source” at the end of this chapter.

4. If installing multiple switches, please follow steps 1 and 2 for installation of the other switches.

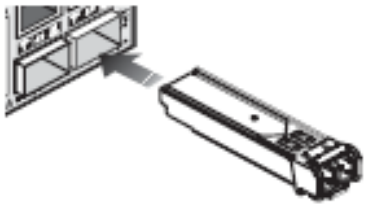
Installing an optional SFP Module

All SFP Modules are hot swappable and can be interchanged without having to power off the switch.

NOTE:

- Depending on the model being used the SFP slots are shared with 10/100/1000Base-T RJ-45 ports. If a SFP is installed in a slot, the associated RJ-45 port is disabled and cannot be used.
- The SFP ports operate only at full duplex. Half duplex operation is not supported.
- Ensure the network cable is NOT connected when you install or remove a SFP module.

CAUTION: Use only supported genuine Alloy SFP's with your switch. Non-Alloy SFP's might have compatible issues, and their use may result in product malfunction.



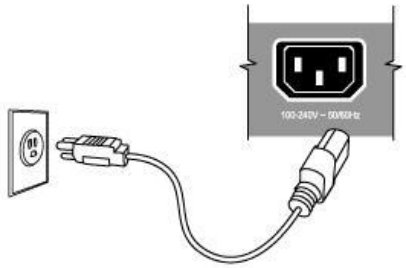
Inserting a SFP Module into a slot

1. Consider network and cabling requirements to select an appropriate SFP transceiver type.
2. Insert the SFP module with the optical connector facing outward and the slot connector facing down. Note that SFP modules are keyed so they can only be installed in one direction.
3. Slide the SFP module into the slot until it clicks into place.

NOTE: SFP Modules are not provided in the switch package.

Connecting to a power source

To switch the power off, please remove the power cord from the switch. To turn the power on, please insert the power cable into the switch.



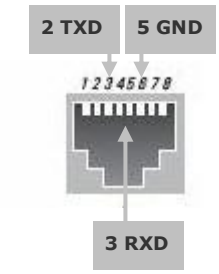
Inserting the power cord to switch and AC power socket

1. Insert the power cable plug directly into the AC Socket located at the back of the switch.
2. Plug the other end of the cable into a grounded, 3-Pin, AC power source.
3. Check the front-panel LEDs as the device is powered on to be sure the POWER LED is lit. If not, check that the power cable is correctly plugged in.

WARNING: For International use, you may need to change the AC line cord. You must use a line cord set that has been approved for the socket type in your country.

Connecting to the console port

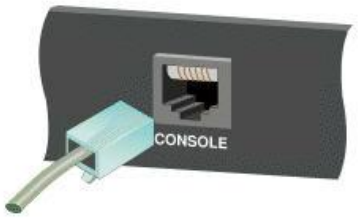
The RJ-45 serial port on the switch's front panel is used to connect to the switch for out-of-band console configuration. The command-line-driven configuration program can be accessed from a terminal or a PC running a terminal emulation program. The pin assignments used to connect to the serial port are provided in the following table:



RJ-45 Serial Port Pin Out

Switch's 8-Pin Serial Port	Null Modem	PC's 9-Pin DTE Port
2 RXD (receive data)	←----------	3 TXD (transmit data)
3 RXD (receive data)	----------→	2 RXD (receive data)
5 SGND (Signal ground)	----------	5 SGND (Signal ground)

NOTE: No other pins are used.



Plugging in the console port

The Serial Ports configuration requirements are as follows:

- Default Baud rate—115,200 bps
- Character Size—8 Characters
- Parity—None
- Stop bit—One
- Data bits—8
- Flow control—none

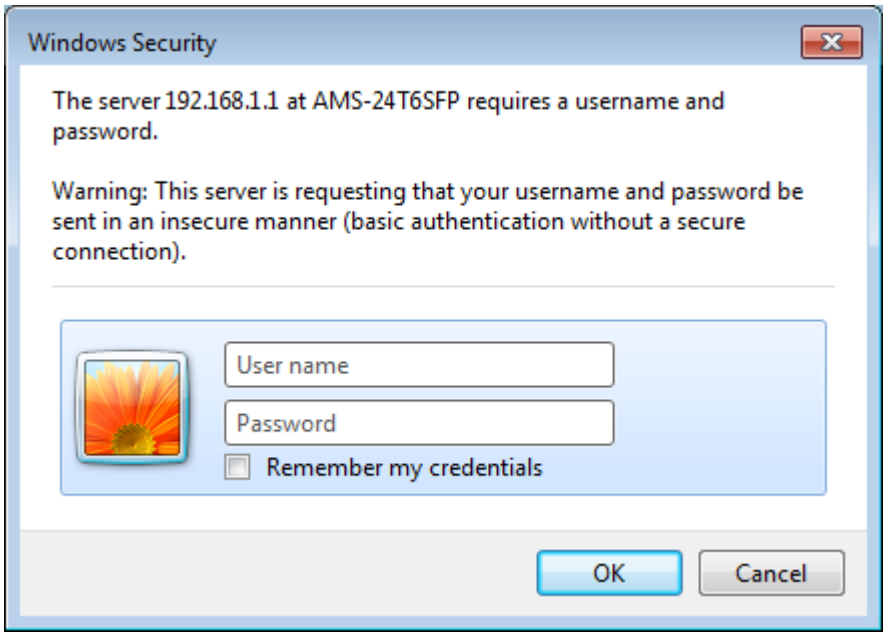
4. Operation of Web-based Management

The default values of the AMS Series switches are listed in the table below:

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
Username	admin
Password	

To access the web management of an AMS Series switch enter the default IP Address in web browser and hit enter. E.g http://192.168.1.1

Once you have entered the IP Address into the web browser you will be prompted to enter a Username and Password in order to access the web management interface. Enter the default values as shown in the table above.


Windows Security
The server 192.168.1.1 at AMS-24T6SFP requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
User name
Password
Remember my credentials
OK
Cancel

NOTE: For full configuration details of the AMS Series switches please refer to the User Manual.

5. Making Network Connections

Connecting Network Devices

The AMS Series switches are designed to be connected to 10, 100 or 1000Mbps network cards in PCs and servers, as well as to other switches and hubs. It may also be connected to remote devices using optional SFP transceivers.

Twisted-Pair Guidelines

Each device requires an unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable with RJ-45 connectors at both ends. Use Category 5, 5e or 6 cable for 1000BASE-T connections, Category 5 or better for 100BASE-TX connections.

Cabling Guidelines

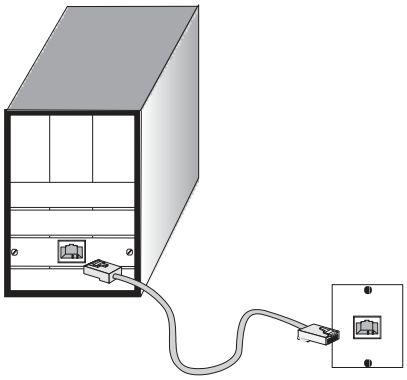
The RJ-45 ports on the switch support automatic MDI/MDI-X pinout configuration, so you can use standard straight-through twisted-pair cables to connect to any other network device (PCs, servers, switches, routers, or hubs).

See Appendix B for further information on cabling.

CAUTION: Do not plug a phone jack connector into an RJ-45 port. This will damage the switch. Use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

Connecting to PC's, Servers and Switches

1. Attach one end of a twisted-pair cable segment to the device's RJ-45 connector.



2. If the device is a network card and the switch is in the wiring closet, attach the other end of the cable segment to a modular wall outlet that is connected to the wiring closet. (See the section "Network Wiring Connections.") Otherwise, attach the other end to an available port on the switch.

3. As each connection is made, the Link LED (on the switch) corresponding to each port will light green (1000 Mbps) or amber (100 Mbps) to indicate that the connection is valid.

NOTE: Avoid using flow control on a port connected to a hub unless it is actually required to solve a problem. Otherwise back pressure jamming signals may degrade overall performance for the segment attached to the hub.

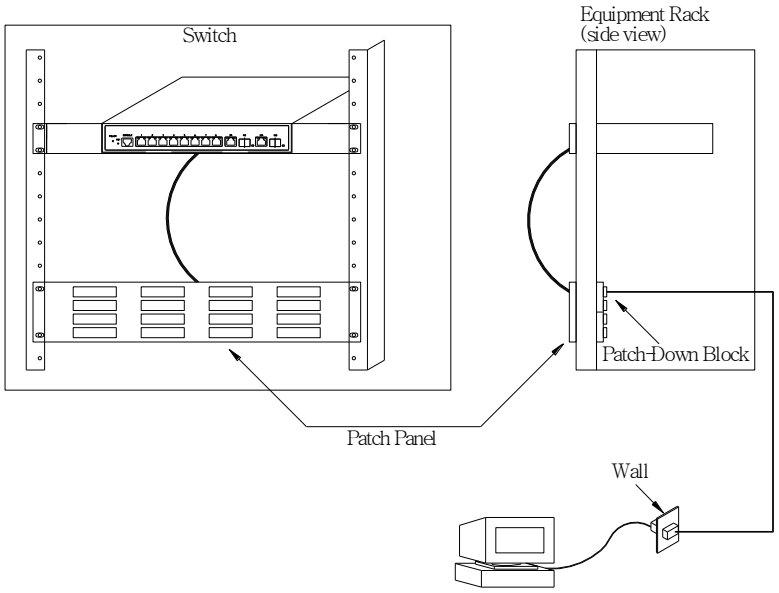
Network Wiring Connections

Today, the punch-down block is an integral part of many of the newer equipment racks. It is actually part of the patch panel. Instructions for making connections in the wiring closet with this type of equipment follows.

1. Attach one end of a patch cable to an available port on the switch, and the other end to the patch panel.

2. If not already in place, attach one end of a cable segment to the back of the patch panel where the punch-down block is located, and the other end to a modular wall outlet.

3. Label the cables to simplify future troubleshooting. See “Cable Labeling and Connection Records”.



Fibre Optic SFP Devices

An optional Gigabit SFP transceiver can be used for a backbone connection between switches, or for connecting to a high-speed server.

Each single-mode fibre port requires 9/125 micron single-mode fibre optic cable with an LC connector at both ends. Each multimode fibre optic port requires 50/125 or 62.5/125 micron multimode fibre optic cabling with an LC connector at both ends.

WARNING: This switch uses lasers to transmit signals over fibre optic cable. The lasers are inherently eye safe in normal operation. However, user should never look directly at a transmit port when it is powered on.

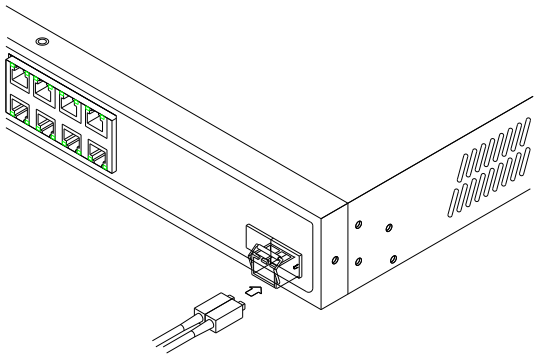
WARNING: When selecting a fibre SFP device, considering safety, please make sure that it can function at a temperature that is not less than the recommended maximum operational temperature of the product. You must also use an approved Laser SFP transceiver.

1. Remove and keep the LC port's rubber plug. When not connected to a fiber cable, the rubber plug should be replaced to protect the optics.

2. Check that the fibre terminators are clean. You can clean the cable plugs by wiping them gently with a clean tissue or cotton ball moistened with a little ethanol. Dirty fibre terminators on fibre optic cables will impair the quality of the light transmitted through the cable and lead to degraded performance on the port.

3. Connect one end of the cable to the LC port on the switch and the other end to the LC port on the other device. Since LC connectors are keyed, the cable can be attached in only one orientation.

4. As a connection is made, check the Link LED on the switch corresponding to the port to be sure that the connection is valid.



6. Cable Labeling and Connection Records

When planning a network installation, it is essential to label the opposing ends of cables and to record where each cable is connected. This will allow users to easily locate inter-connected devices, isolate faults and change your topology without need for unnecessary time consumption.

To best manage the physical implementations of your network, follow these guidelines:

- Clearly label the opposing ends of each cable.
- Using your building's floor plans, draw a map of the location of all network-connected equipment. For each piece of equipment, identify the devices to which it is connected.
- Note the length of each cable and the maximum cable length supported by the switch ports.
- For ease of understanding, use a location-based key when assigning prefixes to your cable labeling.
- Use sequential numbers for cables that originate from the same equipment.
- Differentiate between racks by naming accordingly.
- Label each separate piece of equipment.
- Display a copy of your equipment map, including keys to all abbreviations at each equipment rack.

7. Troubleshooting

Basic Troubleshooting Tips

Most problems are caused by the following situations. Check for these items first when starting your troubleshooting:

Connecting to devices that have a fixed full- duplex configuration.

The RJ-45 ports are configured as “Auto”. That is, when connecting to attached devices, the switch will operate in one of two ways to determine the link speed and the communication mode (half duplex or full duplex):

- If the connected device is also configured to Auto, the switch will automatically negotiate both link speed and communication mode.

- If the connected device has a fixed configuration, for example 100Mbps, at half or full duplex, the switch will automatically sense the link speed, but will default to a communication mode of half duplex.

Because the AMS Series switches behave in this way (in compliance with the IEEE802.3 standard), if a device connected to the switch has a fixed configuration at full duplex, the device will not connect correctly to the switch. The result will be high error rates and very inefficient communications between the switch and the device.

Make sure all devices connected to the AMS Series switches are configured to auto negotiate, or are configured to connect at half duplex (all hubs are configured this way, for example).

Faulty or loose cables.

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

Non-standard cables.

Non-standard and mis-wired cables may cause network collisions and other network problems, and can seriously impair network performance. Use a new correctly-wired cable. For pinouts and correct cable wiring, A category 5 cable tester is a recommended tool for every 100Base-TX and 1000Base-T network installation.

Incorrect Network Topologies.

It is important to make sure you have a valid network topology. If you no longer experience the problems, the new topology is probably at fault. In addition, you should make sure that your network topology contains no data path loops.

Check the port configuration.

A port on your Switch may not be operating as you expect because it has been put into a " blocking" state by Spanning Tree, GVRP (automatic VLANs), or LACP (automatic trunking). (Note that the normal operation of the Spanning Tree, GVRP, and LACP features may put the port in a blocking state.) Or, the port just may have been configured as disabled through software.

Symptom	Action
Power LED is off	Check connections between the switch, the power cord and the wall outlet.
	Contact your dealer for assistance.
Link LED is off	Verify that the switch and attached device are powered on.
	Be sure the cable is plugged into the switch and corresponding device.
	If the switch is installed in a rack, check the connections to the punch-down block and patch panel.
	Verify that the proper cable types is used and its length does not exceed specified limits.
	Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

8. Power and Cooling Problems

Installation

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, the internal power supply may be defective. Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (such as the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

In-band Access

You can access the management agent in the switch from anywhere within the attached network using Telnet, a web browser. However, you must first configure the switch with a valid IP address, subnet mask, and default gateway. If you have trouble establishing a link to the management agent, check to see if you have a valid network connection. Then verify that you entered the correct IP address. Also, be sure the port through which you are connecting to the switch has not been disabled. If it has not been disabled, then check the network cabling that runs between your remote location and the switch.

NOTE: The management agent accepts up to four simultaneous Telnet sessions. If the maximum number of sessions already exists, an additional Telnet connection will not be able to log into the system.

9. Specifications

AMS Series Model	10T2SFP	24T6SFP	48T4SFP	24T4S4SFP	48T4S4SFP	4T24S4SFP
Interface						
Total Ports, comprising	10x GbE	26x GbE	48x GbE	28x GbE	52x GbE	28x GbE
UTP (10/100/1000Mbps)	8	20	44	20	44	4
UTP/(100M/1G) SFP	2	4	4	4	4	4
SFP (100M/1G)	-	2	-	-	-	20
SFP+ (1G/10G)	-	-	-	4	4	4
General						
Jumbo Frames	9Kb on Gigabit Interfaces					
MAC Table	8K	32K	32K	32K	32K	32K
Performance						
Switching Capacity	14.88 mpps	38.69 mpps	71.42 mpps	95.23 mpps	130.94 mpps	95.23 mpps
Forwarding Rate	20Gbps	52Gbps	96Gbps	128Gbps	136Gbps	128Gbps
Layer 2+ Switching						
Spanning Tree	Spanning Tree Protocols supported: STP, RSTP, MSTP					
LACP Trunking	5 groups, 10 ports per group	12 groups, 8 ports per group	24 groups, 12 ports per group	14 groups, 8 ports per group	24 groups, 12 ports per group	14 groups, 12 ports per group
VLAN	4K VLAN's: Port based VLAN's; 802.1Q; MAC Based VLAN's; Management VLAN; Private VLAN					
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS					
GVRP	Supported					
DHCP Relay	Relay of DHCP traffic to DHCP server in different VLAN.					

	Works with DHCP Option 82
IGMP Snooping	V1, V2 and v3 . Supports 1024 Multicast Groups
IGMP Querier	Supported
IGMP Proxy	Supported
MLD Snooping	v1 and v2
Security	
SSH	v1 and v2 are supported
SSL	Supported
IEEE 802.1x	IEEE802.1x: RADIUS authentication, authorisation and accounting, MD5 hash, guest VLAN, single/multiple host mode and single/multiple sessions. Supports IGMP-RADIUS based 802.1x Dynamic VLAN assignment
Layer 2 isolation	PVE (Private VLAN Edge, aka protected ports) for L2 isolation between clients in the same VLAN. Supports multiple uplinks.
Port Security	Locks MAC Addresses to ports, and limits the number of learned MAC addresses
IP Source Guard	Supports illegal IP address from accessing to specific port in the switch.
RADIUS/ TACACS+	Supports RADIUS and TACACS+ authentication. Switch as a client.
Storm control	Broadcast, multicast, or unicast storm on a port.
ACLs	Supports up to 256 entries Drop or rate limitation based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP) / IP precedence, TCP/ UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, TCP flag.
Port Security	Locks MAC Addresses to ports, and limits the number of learned MAC addresses
Quality of Service	
H/W Priority Queue	Supports 8 hardware priority queues
Scheduling	Strict priority and weighted round-robin (WRR). Queue assignment

	based on DSCP and class of service (802.1p/ CoS)
Classification	Port based; 802.1p VLAN priority based; IPv4/IPv6 precedence/ type of service (ToS) / DSCP based; Differentiated Services (DiffServ); classification and re-marking ACLs, trusted QoS
Rate Limiting	Ingress policer; egress shaping and rate control; per VLAN, per port and flow based
IPv6 applications	Web/SSL, Telnet/SSH, Ping, Simple Network Time Protocol (SNTP), Trivial File Transfer Protocol (TFTP), SNMP, RADIUS, Syslog
Management	
Web GUI interface	HTTP/ HTTPS
Dual Image	Dual image provides independent primary and secondary OS files for backup while upgrading.
SNMP	SNMP v1, 2c and 3
RMON	RMON (Remote Monitoring) groups 1,2,3,9
IPv4 and IPv6	Dual protocol stack supported
Firmware Upgrade	Web browser upgrade (HTTP/ HTTPS) and TFTP Upgrade through console port also supported.
Port mirroring	Up to 8 source ports can be mirrored to single destination port
s-Flow	Monitoring for high speed switched networks supported
UPnP	Universal Plug and Play supported
Green Ethernet	
Link detection	Compliant with IEEE802.3az Energy Efficient Ethernet. Automatically turns off power on Gigabit Ethernet RJ-45 port when detecting link down or client idle. Active mode is resumed without loss of any packets when the switch detects link up.
Cable length detection	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables.
Discovery	
LLDP	IEEE802.1AB - Link Layer Detection Protocol with LLDP-MED extensions
Carrier Ethernet Protocols and Features (AMS-4T24S4SFP Only)	

IEEE 802.3ah Ethernet OAM	Simple link fault management (LFM) for Ethernet as defined in IEEE 802.3ah (MAC Layer OAM)			
IEEE 802.1ag Ethernet CFM	IEEE 802.1ag Ethernet CFM function that provides connectivity fault management			
Syn-E and IEEE1588v2	Both IEEE 1588v2 and ITU-T Sync-E Ethernet synchronization protocols, and can emulate link OAM and service OAM protocols (by request).			
ITU-T Y.1731	Both IEEE 1588v2 and ITU-T Sync-E Ethernet synchronization protocols, and can emulate link OAM and service OAM protocols.			
ITU-T G.8032	ITU-T service OAM standard Y.1731 divides a network into maintenance domains in the form of hierarchy levels (to be released in v1.20 firmware)			
MEF E-tree	MEF E-tree service over MPLS (including E-LINE, E-LAN and E-TREE (EP-TREE, EVP-TREE). Available on release of v1.20 firmware.			
Environmental Specifications				
Dimensions (WxHxD, mm)	280 x 44 x 166	442 x 44 x 300	442 x 44 x 385	442 x 44 x 300
Case	Desktop	1RU rackmount (mounting kit included), all metal case		
Weight	1.382Kg	3.84Kg	5Kg	3.84Kg
Temperature	0° to 40° operating; -20° to 70° storage			
Humidity	10% to 90% , relative, non-condensing			
Power Supply	100-240VAC 50-60Hz, internal , universal			100-240VAC 50-60Hz, internal, universal ; -48VDC dual power input
Certification	CE Mark, FCC Part 15 (CFR47) Class A, C-Tick			